

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

Interview Summary

Application No.

09/995,285

Applicant(s)

MAR ET AL.

Examiner

Phuong N. Hoang

Art Unit

2126

All participants (applicant, applicant's representative, PTO personnel):

(1) Phuong N. Hoang.

(3) _____.

(2) Daniel M. De Vos.

(4) _____.

Date of Interview: 01 September 2004.

Type: a) ☒ Telephonic b) ☐ Video Conference

c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: _____.

Claim(s) discussed: Claims 1 - 29.

Identification of prior art discussed: _____.

Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Discussed the allowable subject matter in claims 1 and 20. Applicant agreed to amend the claims in accordance to examiner amendment, cancel claims 16 - 19, and 21 - 22, and add new claims 23 - 29. Applicant also agreed to charge the extra claims using his deposit account.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiner's Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Hoang, Phuong

From: Dan_DeVos@bstz.com
Sent: Friday, September 03, 2004 1:27 PM
To: Hoang, Phuong
Subject: RE:



P054 - Preliminary
Amendment E...

Phuong,
Enclosed is another version. I checked through the claims for other 112s,
but did not see any. Sorry for the error - it has been a long week.
Thanks,
Dan

(See attached file: P054 - Preliminary Amendment Emailed.doc)

"Hoang, Phuong"
<Phuong.Hoang@USP
TO.GOV>

09/03/2004 10:03
AM

To: <Dan_DeVos@bstz.com>

cc:

Subject: RE:

Dan,

I found another 112/2 paragraph on claim 20.

a) means for establishing the start time of the TPDR as a
selected time.

"the start time" and "the TPDR" are not mentioned mentioned in the claim,
and it is lack of antecedent basis.

By the way, would you check all 112/2 issues.

Thank,

Phuong.

-----Original Message-----

From: Dan_DeVos@bstz.com [mailto:Dan_DeVos@bstz.com]

Sent: Friday, September 03, 2004 12:29 PM
To: Hoang, Phuong
Subject: RE:

Phuong,
Another version enclosed. Sorry for the 112.
Thanks,
Dan

(See attached file: P054 - Preliminary Amendment Emailed.doc)

"Hoang, Phuong"
<Phuong.Hoang@USP
TO.GOV>

09/03/2004 08:46
AM

To: <Dan_DeVos@bstz.com>

cc:

Subject: RE:

Dan,

I found out that claim 20 has 112 2nd paragraph rejection.
Step e) means for repeating actions b to d until the new selected time is
in excess of the time limit.
"the time limit" was not defined or mentioned earlier in the claim.
You should add the limitation in before referring it again.
For example, as to claim 1
step c) establishing a time limit for the TPDT;

Please do it quick and e-mail to me the updated version so I can do
examiner's amendment.

Thank you,
Phuong.

-----Original Message-----

From: Dan_DeVos@bstz.com [mailto:Dan_DeVos@bstz.com]
Sent: Thursday, September 02, 2004 1:17 PM
To: Hoang, Phuong

Subject:

Phuong,

Per your voice message - the oversight of deleted claim 16 has been fixed.
Please let me know if you would like me to email you a scan of a signed
copy (I could also include an electronic copy of Figure 3).

Thanks,

Dan

(See attached file: P054 - Preliminary Amendment Emailed.doc)

----- Forwarded by Dan DeVos/bstzsecure on 09/02/2004 10:11 AM -----

Dan DeVos

09/01/2004 10:55

PM

To: phuong.hoang@uspto.gov

cc:

Subject:

Phuong,

Enclosed is a preliminary amendment.

Please let me know if you would like me to email you a scan of a signed
copy (I could also include an electronic copy of Figure 3).

Thanks,

Dan

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/995,285 Confirmation No.
First Named : Aaron Mar
Inventor
Filed : 11/27/2001
TC/A.U. : Method and Apparatus for Art Unit: 2182

Enumeration of Sets of
Concurrently Scheduled
Events

Examiner : Not yet assigned
Docket No. : 004906.P054
Customer No. : 08791

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to the examination of the above-referenced application on the merits it is respectfully requested that the following amendment be entered.

Amendments to the Specification begins on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks begin on page 12 of this paper.

In the Specification:

Please amend paragraph [0039] as follows:

[0039] In a packet handling device, QoS policies contain classification rules which select a subset of the packets passing through the device in order to specify the QoS treatment that those packets are to receive. For example, a QoS policy might specify that all TCP packets destined to TCP port 80 at the IP address 208.216.181.15 should take advantage of a reserved pool of 1 Mbps of bandwidth. It so happens that this policy would match all web browsing traffic (TCP port 80) destined for the ~~www.amazon.com~~ web site (208.216.181.15).

[0040] A conflict occurs if another QoS policy in the same packet handling device specifies that this same traffic must compete for whatever bandwidth is available. For example, in Figure 2 QoS policy 112 might contain the above rules specifying that web traffic bound for ~~the web site (208.216.181.15)www.amazon.com~~ should take advantage of 1 Mbps of bandwidth that is reserved for such traffic on output interface 103. The QoS policy 114 might also contain rules matching the web browsing traffic bound for ~~the web site (208.216.181.15)www.amazon.com~~, but QoS policy 114 might specify that this traffic should just compete with other traffic for access to the bandwidth of output interface 105. If both of policies 112 and 114 were in effect simultaneously then a conflict would occur since the router or packet handling device would not know which of the two policies to enforce. Even if the two mismatching policies are in separate routers or packet handling devices and one device is upstream of the other, there may not be a direct conflict, but packets will not be consistently provided with the appropriate QoS treatment.

Amendments to the Claims

Listing of Claims:

1. (Original) A computer-implemented method for enumerating sets of concurrently scheduled events for automatic validation, the method comprising, in a programmed computer system:
 - a) providing a universal master schedule comprising a plurality of time period data records (TPDRs) each having a start time and an end time, at least some of the TPDRs comprising references to events, each event having an overall start time and an overall end time, the events including recurring events each having a period;
 - b) retrieving a TPDR from the universal master schedule;
 - c) establishing a time limit for the TPDR;
 - d) performing a time-based iteration to identify sets of concurrent events by:
 - 1) establishing the start time of the TPDR as a selected time;
 - 2) identifying a set of zero or more events occurring at the selected time;
 - 3) creating a record of the set of zero or more events occurring at the selected time;
 - 4) identifying a new selected time corresponding to a next time when an event referenced by the TPDR could start or stop; and,
 - 5) repeating actions (2) to (4) until the new selected time is in excess of the time limit;

and,

- e) performing actions (b) through (d) for each TPDR in the universal master schedule.

2. (Original) The method of claim 1 wherein the time limit is a lesser one of a least common multiple of the periods of any recurring events reference by the TPDR and a length of the TPDR.

3. (Original) The method of claim 1 wherein the events comprise single-shot events and the method comprises determining whether all events associated with a TPDR are single-shot events and, if so, recording the set of single-shot events associated with the TPDR as a set of concurrent events for validation.

4. (Original) The method of claim 1 wherein providing the universal master schedule comprises:

- a) providing a plurality of master schedule data structures, each master schedule data structure corresponding to a resource and comprising one or more TPDRs each associated with a time period;
- b) collapsing the plurality of master schedule data structures into the universal master schedule data structure by:
 - 1) providing an initial universal master schedule data structure comprising at least one TPDR;
 - 2) selecting one of the TPDRs from one of the master schedule data structures as a current TPDR;

3) if necessary, modifying the universal master schedule data structure so that the start time of the current TPDR corresponds to the end time of one TPDR of the universal master schedule data structure and the start time of another TPDR of the universal master schedule data structure and the end time of the current TPDR corresponds to the end time of one TPDR of the universal master schedule data structure and the start time of another TPDR of the universal master schedule data structure;

4) in the universal master schedule data structure, associating each TPDR which has a start time greater or equal to the start time of the current TPDR and a finish time less than or equal to the finish time of the current TPDR with the events referenced by the current TPDR; and,

5) repeating actions (2) through (4) for the remaining TPDRs of the master schedule data structures.

5. (Original) The method of claim 4 wherein modifying the universal master schedule data structure comprises, in either order:

locating a TPDR in the universal master schedule data structure for which the associated time period includes the start time of the current TPDR and, if the start time of the current TPDR is after the start time of the located TPDR, replacing the located TPDR in the universal master data structure with first and second altered TPDRs which differ from the located TPDR in that the end time of the first altered TPDR and the start time of the second altered TPDR are set to the start time of the current TPDR; and, locating a TPDR in the universal master schedule data structure for which the associated time period includes the end time of the current TPDR and, if the end time of the current TPDR is after the start time of the located TPDR, replacing the located TPDR in the universal master data structure with first

and second altered TPDRs which differ from the located TPDR in that the end time of the first altered TPDR and the start time of the second altered TPDR are set to the end time of the current TPDR.

6. (Original) The method of claim 4 wherein the initial universal master schedule data structure comprises a selected one of the master schedule data structures.

7. (Original) The method of claim 4 wherein providing one or more of the master schedules comprises:

a) providing a plurality of mini-schedule data structures, each mini-schedule data structure having a priority, corresponding to a resource and comprising one or more TPDRs each associated with a time period;

b) collapsing the plurality of mini-schedule data structures into the master schedule data structure by:

1) providing an initial master schedule data structure comprising at least one TPDR and selecting a lowest priority one of the mini-schedules as a current mini-schedule;

2) selecting one of the TPDRs from the current mini-schedule as a current TPDR;

3) if necessary, modifying the master schedule data structure so that the start time of the current TPDR corresponds to the end time of one TPDR of the universal master schedule data structure and the start time of another TPDR of the universal master schedule data structure - and the end time of the current TPDR corresponds to the end time of one TPDR of the universal master schedule data structure and the start time of another TPDR of the universal master schedule data structure;

4) in the master schedule data structure, associating each TPDR which has a start time greater or equal to the start time of the current TPDR and a finish time less than or equal to the finish time of the current TPDR with the events referenced by the current TPDR;

5) repeating actions (2) through (4) for the remaining TPDRs of the current mini-schedule; and,

6) repeating actions (2) through (5) for each of the mini-schedules in priority order.

8. (Original) The method of claim 7 wherein modifying the master schedule data structure comprises in either order:

locating a TPDR in the master schedule data structure for which the associated time period includes the start time of the current TPDR and, if the start time of the current TPDR is after the start time of the located TPDR, replacing the located TPDR in the master data structure with first and second altered TPDRs which differ from the located TPDR in that the end time of the first altered TPDR and the start time of the second altered TPDR are set to the start time of the current TPDR; and,

locating a TPDR in the master schedule data structure for which the associated time period includes the end time of the current TPDR and, if the end time of the current TPDR is after the start time of the located TPDR, replacing the located TPDR in the master data structure with first and second altered TPDRs which differ from the located TPDR in that the end time of the first altered TPDR and the start time of the second altered TPDR are set to the end time of the current TPDR.

9. (Original) The method of claim 7 wherein, in collapsing the plurality of mini-schedules, associating a TPDR with the events referenced by the current TPDR comprises, if the current TPDR is associated with a single-shot event, replacing any references to events referenced by the TPDR with a reference to the single-shot event.
10. (Original) The method of claim 9 wherein, in collapsing the plurality of mini-schedules, associating a TPDR with the events referenced by the current TPDR comprises, if the current TPDR is associated with one or more recurring events, adding references to the one or more recurring events to the TPDR.
11. (Original) The method of claim 1 wherein creating a record of the set of zero or more events comprises providing a bit vector having one bit for each of a number of possible events and setting a bit in the bit vector corresponding to each of the zero or more events.
12. (Original) The method of claim 11 wherein creating a record of the set of zero or more events comprises checking a bit vector repository to determine if the bit vector is the same as any bit vector already stored in the bit vector repository and, if not, storing the bit vector in the bit vector repository.
13. (Original) The method of claim 1 wherein the events each comprise enabling a specific QoS policy on a data communication network.
14. (Original) The method of claim 1 wherein the universal master schedule data structure comprises a B-tree.

15. (Original) The method of claim 1 wherein the universal master schedule data structure comprises a skip list.

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Currently Amended) Apparatus for enumerating sets of concurrently scheduled events, the apparatus comprising:

- a) a first means for collapsing a plurality of mini-schedules into a master schedule;
- b) a second means for collapsing a plurality of master schedules into a universal master schedule, the second means connected to receive a plurality of master schedules generated by the first means; and,
- e) a third means for extracting a plurality of sets of concurrent events, the third means connected to receive a universal master schedule from the second means and to store a data record containing information identifying sets of concurrent events scheduled in the universal master schedule, wherein the third means comprises means for performing a time-based iteration comprising,
 - a) means for establishing a start time of a time period data record (TPDR) as a selected time;
 - b) means for identifying a set of zero or more events occurring at the selected time;

c) means for creating a record of the set of zero or more events occurring at the selected time;

d) means for identifying a new selected time corresponding to a next time when an event referenced by the TPDR could start or stop; and,

e) means for repeating actions (b) to (d) until the new selected time is in excess of a time limit of the TPDR.

21. (Canceled)

22. (Canceled)

23. (Original) ~~The apparatus of claim 20 comprising means for determining whether all events in a set of concurrent events are single-shot.~~

24. (New) A computer readable medium containing instructions which, when executed by a processor, cause the processor to perform operations comprising:

- a) providing a universal master schedule comprising a plurality of time period data records (TPDRs) each having a start time and an end time, at least some of the TPDRs comprising references to events, each event having an overall start time and an overall end time, the events including recurring events each having a period;
- b) retrieving a TPDR from the universal master schedule;
- c) establishing a time limit for the TPDR;
- d) performing a time-based iteration to identify sets of concurrent events by:

- 1) establishing the start time of the TPDR as a selected time;
- 2) identifying a set of zero or more events occurring at the selected time;
- 3) creating a record of the set of zero or more events occurring at the selected time;
- 4) identifying a new selected time corresponding to a next time when an event referenced by the TPDR could start or stop; and,
- 5) repeating actions (2) to (4) until the new selected time is in excess of the time limit;

and,

- e) performing actions (b) through (d) for each TPDR in the universal master schedule.

25. (New) The method of claim 24 wherein the time limit is a lesser one of a least common multiple of the periods of any recurring events reference by the TPDR and a length of the TPDR.
26. (Original) The method of claim 24 wherein the events comprise single-shot events and the method comprises determining whether all events associated with a TPDR are single-shot events and, if so, recording the set of single-shot events associated with the TPDR as a set of concurrent events for validation.

27. (Original) The method of claim 24 wherein providing the universal master schedule comprises:

a) providing a plurality of master schedule data structures, each master schedule data structure corresponding to a resource and comprising one or more TPDRs each associated with a time period;

b) collapsing the plurality of master schedule data structures into the universal master schedule data structure by:

1) providing an initial universal master schedule data structure comprising at least one TPDR;

2) selecting one of the TPDRs from one of the master schedule data structures as a current TPDR;

3) if necessary, modifying the universal master schedule data structure so that the start time of the current TPDR corresponds to the end time of one TPDR of the universal master schedule data structure and the start time of another TPDR of the universal master schedule data structure and the end time of the current TPDR corresponds to the end time of one TPDR of the universal master schedule data structure and the start time of another TPDR of the universal master schedule data structure;

4) in the universal master schedule data structure, associating each TPDR which has a start time greater or equal to the start time of the current TPDR and a finish time less than or equal to the finish time of the current TPDR with the events referenced by the current TPDR; and,

5) repeating actions (2) through (4) for the remaining TPDRs of the master schedule data structures.

28. (Original) The method of claim 27 wherein modifying the universal master schedule data structure comprises, in either order:

locating a TPDR in the universal master schedule data structure for which the associated time period includes the start time of the current TPDR and, if the start time of the current TPDR is after the start time of the located TPDR, replacing the located TPDR in the universal master data structure with first and second altered TPDRs which differ from the located TPDR in that the end time of the first altered TPDR and the start time of the second altered TPDR are set to the start time of the current TPDR; and, locating a TPDR in the universal master schedule data structure for which the associated time period includes the end time of the current TPDR and, if the end time of the current TPDR is after the start time of the located TPDR, replacing the located TPDR in the universal master data structure with first and second altered TPDRs which differ from the located TPDR in that the end time of the first altered TPDR and the start time of the second altered TPDR are set to the end time of the current TPDR.

29. (Original) The method of claim 24 wherein the events each comprise enabling a specific QoS policy on a data communication network.

DRAWING AMENDMENT(S)

The attached sheet of drawings includes changes to Figure 3. This sheet, which includes Figure 3, replaces the original sheet including Figure 3. Figure 3 has been changed to include the label "Prior Art."

Remarks

Applicant respectfully requests reconsideration of the application as amended.
Claims 1- 15, 20, 23 - 29 remain in the application. Claim 20 has been amended. Claims
16-19 and 21 have been canceled.

Charge our Deposit Account

~~Please charge any shortage to our Deposit Account No. 02-2666.~~

Respectfully submitted,

~~BLAKELY-SOKOLOFF TAYLOR & ZAFMAN LLP~~

Date: _____, 2004

Daniel M. De Vos
Reg. No. 37,813

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025-1030
(408) 720-8300